

# **Preliminary Results from the HRST Mobility analysis**

**For Discussion**

**Version One  
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## INTRODUCTION

The aim of this paper is to further investigate domestic mobility rates of highly qualified individuals in the EU and beyond. As this is a first draft for discussion, the idea was to present the 'grandes lignes' of the possible results in order to decide which are the best and most interesting directions to follow. It takes as its building blocks the previous studies conducted for Eurostat on the stocks and flows of HRST as well as the more recent feasibility study on compiling internationally comparable mobility indicators on highly qualified personnel.

Therefore, having already established the suitability of the Community Labour Force Survey (CLFS) as both a reliable and valuable source to construct *aggregated* mobility indicators on highly qualified individuals, this paper looks to extend the analysis in several ways:

- To update the time series to include 1999
- To complement the previous analysis on the EU-15 with consideration of the EFTA and Candidate countries
- To extend the sectoral analysis to reflect recent definitional/methodological developments within Eurostat
- To develop the mobility indicators according to age
- To single out Scientists and Engineers in the analysis

## DATA REQUESTED AND RECEIVED

In the context of this study, the Labour Force Survey Unit of Eurostat were sent a request for data according to the following criteria:

Countries where available	EU-15, plus EFTA countries, plus Candidate countries
Time scale	1994 to latest available year
Regional level	NUTS 2 level for EU-15

### Variables

- Gender
- Age: 0-14, 15-19, 20-24, 25-29, 30-34 and at 5 year intervals until 65+
- Qualification: ISCED L, M, H (where low = 0, 1 or 2; medium = 3; high =5, 6 or 7 – 1976 version)
- Occupation: ISCO 3 digit level for ISCO 1, 2 and 3. ISCO 2 digit level for all other occupations
- By NACE sector of activity [2 digit level] in year t
- Working status in year t (employed, unemployed, inactive)
- Also employed in year t-1
- Information on industry of employment in year t-1
- Year in which person started working for this employer or as self-employed – [0-1, 1-2, 2+]
- Nationality - [National/EU citizen/Non-EU citizen]
- Country of residence one year before survey – [National/EU citizen/Non-EU citizen]
- Region of residence one year before survey – NUTS 2 digit level

## 1.1. Summary of data received

A brief summary of the available data is shown in the table below:

**Table 1: Summary of available data and possible breakdowns**

	Countries for which data was available	Available Years	Employed HRST	Started current occupation In year t-1 to t?	ISCED	ISCO	Breakdown by sector
EU-15	B	95 - 99	ok	ok			
	DK	95 - 99	ok	ok			
	D	95 - 99	except 1998	ok	No ISCED for 1998		
	EL	95 - 98	ok	ok			
	E	95 - 99	ok	ok			
	F	95 - 99	ok	ok			
	IRL	95 - 99	not '98 and '99	ok	No ISCED for 1998 or 1999	No ISCO for 1999	
	I	95 - 99	ok	ok			
	L	95 - 99	except 1998	ok	No ISCED for 1998		
	NL	95 - 99	ok	ok			
	A	95 - 99	ok	not for 1998 or 1999, extremely unreliable in 1997			
	P	95 - 99	ok	ok			
	FIN	95 - 99	ok	ok			
	S	95 - 99	ok	ok			
	EFTA	UK	95 - 99	except 1998	ok	No ISCED for 1998	
IS		95 - 98	ok	ok			
NO		95 - 99	ok	ok			
CH		96 - 99	ok	ok			
CZ*		97 - 99					
CEC	EE	97 - 99	ok	ok			
	HU	96 - 99	ok	ok			
	PL	97 - 99	ok	ok			No sectoral breakdown for 1997, 1998 or 1999
	RO	97 - 98	ok	No data			
	SI*	96 - 99					

N.B. Reference period in this table is for 1997 - 1999

\* To be checked

## 1.2. Some definitions

HRST is defined according to the Canberra Manual as a person fulfilling one of the following conditions:

- Successfully completed education at the third level in a S&T field of study<sup>1</sup>;
- Not formally qualified as above, but employed in a S&T occupation where the above qualifications are normally required.

### 1.2.1. HRST by education (HRSTE)

In order to minimise cultural differences in education systems and to increase cross-country comparability, HRST analysis uses the International Standard Classification of Education (ISCED) developed by UNESCO. HRST includes all those persons that have completed studies at the third level. Due to an increasing demand for internationally comparable indicators on education and a mounting complexity in the educational programmes on offer in different countries, the original standard, developed in 1976, has been revised and updated in 1997.

<sup>1</sup> According to the Canberra Manual, the seven broad fields of study are Natural Sciences, Engineering and Technology, Medical Sciences, Agricultural sciences, social sciences, humanities, other fields (*Canberra Manual* §71).

As a result, HRST data in this chapter up to and including 1997 are built up utilising the original classification. From 1998, ISCED 1997 is employed.

Prior to 1998, therefore, HRST consists of those persons that belong in ISCED categories 5, 6 and 7. ISCED 5 is comprised of people that are involved in studies at the third/tertiary level, first stage that leads to an award not equivalent to a first university degree. ISCED 6 refers to education that leads to a first university degree or the equivalent, whereas ISCED 7 refers to education that leads to a postgraduate university degree or equivalent.

Under the new ISCED classification, HRST consists of those persons that belong in categories 5b, 5a and 6. ISCED 5b refers to programmes which are practical/technical/occupationally specific; 5a refers to programmes which are largely theoretically based/research preparatory or which provide access to professions with high skill requirement; 6 refers to programmes which lead directly to an advanced research qualification, such as a doctoral degree.

### **1.2.2. HRST by Occupation (HRSTO)**

Occupations relevant to S&T are classified according to the International Standard Classification of Occupation (ISCO), developed by the International Labour Organisation (ILO). Recommendations in the Canberra Manual identify certain occupation groups as HRST, whether the person has a formal education qualification or not. The major group “professionals” (ISCO major group 2) is defined as: occupations which mostly require skills at the fourth ISCO level; which is considered equivalent to ISCED '76 categories 6 or 7, i.e. university level HRST. Similarly, ISCO 3 (“technicians”) is defined as requiring skills that correspond to ISCED '76 level 5.

For this reason, both these groups are comprehensively included. Professionals are sub-divided into four sub-major groups - physical, mathematical and engineering science professionals; life science and health professionals; teaching professionals; and other professionals. In previous studies, certain managerial occupations were included in order to include those that seemed of specific interest to HRST, such as R&D managers. Specifically, this included people in ISCO 122, 123 and 131 (Production and Operations Department Managers, Other Department Managers, General Managers).

### **1.2.3. A more practical definition of HRST**

A pilot survey conducted in 1995 tested the validity of the original definitions for HRST laid down in the Canberra Manual. The results indicated that, for the EU, including these certain managerial occupations distorted the results significantly, due to variations between countries in the treatment and classification of managers. The consequence was that in order not to exclude a small number of persons relevant to HRST, a much larger number had to be included. Subsequent studies performed for Eurostat have therefore excluded legislators and managers (ISCO 122, 123 and 131) unless they have attained education at the third level.

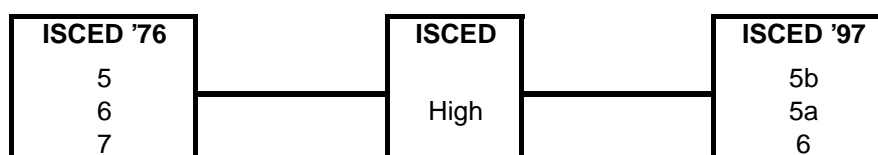
### **1.2.4. Differences with previous feasibility study**

At this point, one should point out the conceptual differences, as well as the associated reasoning, between the approach taken in this study and the feasibility study conducted previously.

The first difference can be found in the utilisation of ISCED. The revised version of ISCED has sought to more accurately categorise separate education classifications. But this also means that data over the time series are collected according to different methodological definitions. As a result Eurostat and UNESCO have both conducted research into the comparability of these two versions (see annexes 1 and 2). Both have recommended that comparison between new and old versions should take place by creating an ISCED ‘High’, grouping subsets within this category. For ISCED

'76 this consists of levels 5, 6 & 7. And for the 1997 version, this is composed of 5b, 5a and 6. Whilst in the previous study, ISCED categories 6/7 (1976 version) or 5a/6 (1997 version) were employed, here the broader category of ISCED high is used. The starting point for data using ISCED '97 in the Community Labour Force Survey is 1998.

**Figure 1: Grouping of ISCED High**



It is recognised that greater focus on the most highly educated individuals (PhD holders) is desirable. And it may be possible to construct aggregated indicators for those groups as separate case studies, or as part of a more global analysis. However, in order to build up any time series and ascertain the main trends – one of the main aims of the project – it is recommended that comparison using both ISCED '76 and ISCED '97 concentrates more on ISCED High than on the individual codings. This is further underlined by evidence from previous HRST studies that have discovered some problems, when ISCED fields are considered separately, at the Member State level in suitably mapping national systems of education to the international standard.

According to UNESCO, It seems that comparability of ISCED, at least within the OECD, is at its highest in the European Union. Less satisfactory correspondence might be expected for countries such as North America or Australia. Future analyses that include these countries should therefore carefully investigate the degree of comparability between ISCED '76 and '97 (attached in Annex 2 is information from UNESCO concerning this question).

Nevertheless, a cursory inspection of table 1 reveals for the EU as a whole quite how much difficulty the Member States faced in mapping national education systems to the **1997 version** of the international classification (ISCED) system, especially when the system was first introduced to the CLFS in 1998.

**Table 2: Problems encountered as a result of the changeover of ISCED**

ISCED level	1995	1996	1997	1998
<b>Total H</b>	39752.6	40506.4	42328.2	23950.4
<b>Total L + M</b>	244903.2	245375.9	245921.3	155846.1
<b>Total Blanks</b>	14161.6	15418.3	14218.5	124264.3
<b>Proportion of Blanks (%)</b>	4.7	5.1	4.7	40.9

The other main difference is the use of ISCO. For this study the use of ISCO conforms *more generally* (though still not entirely) with the recommendations laid down in the Canberra Manual and the previous research conducted on HRST. This does not preclude additional focus on ISCO 2 professionals in the future; the only deterrent may be the sample size limitations, however given

that this paper has looked at scientists and engineers (ISCO 21 and 22), this should in general arise only if other disaggregations are also required.

Another problem that has been encountered is miscoding. For some countries, years and age groups, data have been received for ISCO categories that do not exist i.e. for Denmark in 1998 data were provided for ISCO 20. Conversations with the Labour Force Survey Unit ascertained that these occurred through lack of precision at the Member State level. Further investigation has revealed that these data are negligible.

Annex 3 attaches the guidelines produced by the Labour Force Survey Unit in Eurostat, which clearly details the limitations on the reliability of data. Two flags, A and B, are used. Figures in the A category fall below a certain level (depending on the country) and must not be published. Figure in the B category should append a warning as to their reliability. Due to the nature of the disaggregations (already at the national level the number of employed HRST who started their current occupation in the period  $t_1$  to  $t_2$  is fairly small) as well as the attempts to maximise the possibilities of the CLFS, rigorous use of these flags has been necessary.

## 2. RESULTS

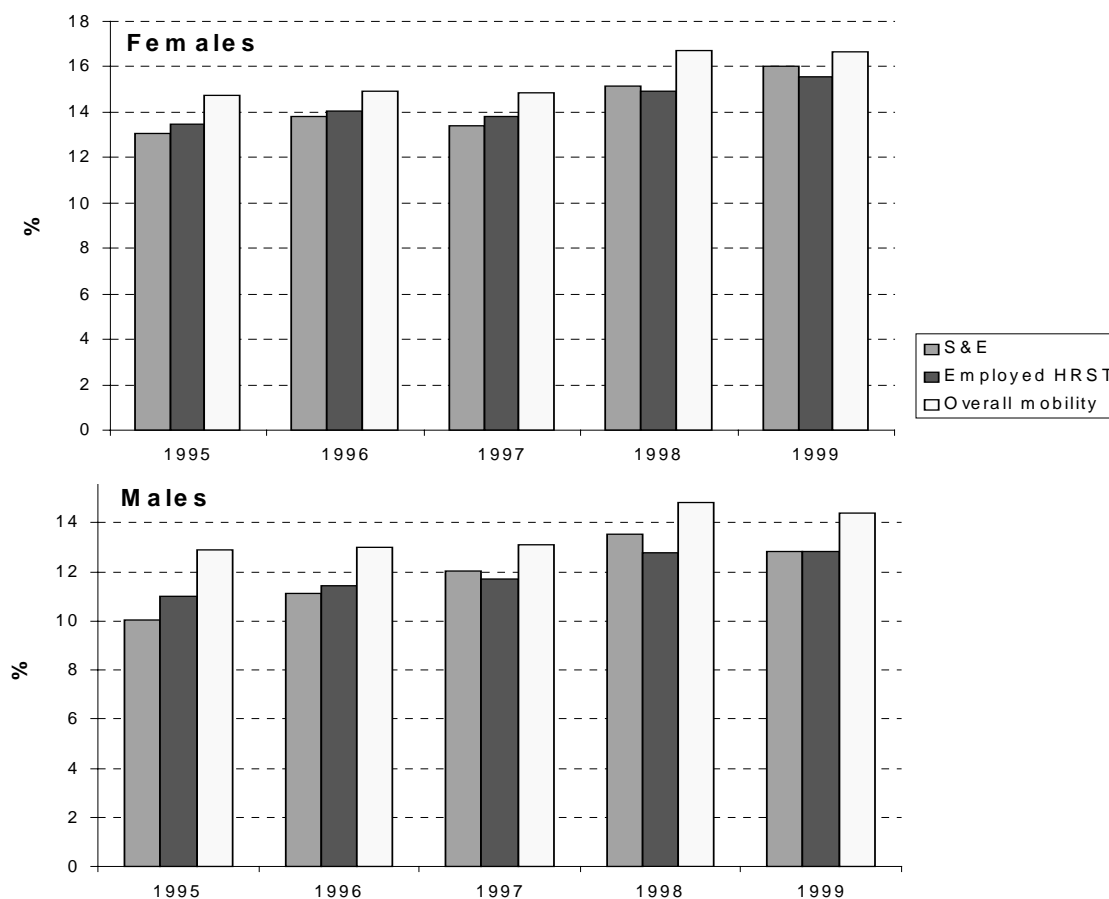
The results look at how far these basic mobility indicators, as designed by Eurostat to provide a clear picture of HRST mobility, can be compiled. Comparisons are made between the results achieved from this data extraction and those achieved in 1999 using only ISCED 6, 7/ 5a, 6 and ISCO 2. To this end, the results should of course be interpreted with caution.

In constructing the indicators, if either the numerator or the denominator fell between A and B, then the indicator was flagged accordingly. Since the numerator in the mobility rates (proportion of HRST that have started a new job between year  $t_1$  and  $t$ ) only considers those people that are employed, it made little sense to use the original definition of HRST, which would only distort the figures. Therefore reference is made to 'Employed HRST', which considers all those persons that either work in a S&T occupation (any ISCED level) or work in another profession but have a tertiary level education.

### 2.1. Overall EU mobility

A cursory inspection of figure 2 reveals the increasing degree of mobility in the five-year period under consideration. An initially surprising result is that mobility is lower for employed HRST than is the case overall. Whilst the reasons for this are not immediately clear, one should recall that this study deals only with national mobility between various employment situations (i.e. new employer or new employee status) and in no way deals with geographical mobility, be it domestic or international. Moreover, overall mobility rates include a number of less stable or part-time jobs with little required training, where hire and fire policy can be more distinct.

**Figure 2: Trends in EU-15 mobility rates (1995 –1999, Males, Females)**



These considerations made, it is also noticeable that, for the whole of the time period in question, mobility is higher for women than it is for men. Furthermore, the difference between the lowest rate (generally for scientists and engineers) and overall mobility is less distinct for women. Further investigation of these differences is recommended at the national level.

## 2.2. A comparison of approaches

A comparison of the mobility rates calculated using the conceptual approach in this study and that used in the last, however, reveals some rather strong differences (see table 3). Given the above results (that mobility tends to be higher the less highly qualified the worker) and the differing conceptual approach, it is not unusual that the two should differ. Heavy consideration should be made of the fact that this definition includes all flows of workers i.e. flows into the labour force from students/unemployed etc. Further focus is required.

**Table 3: Comparison of mobility rates using the old and new definitions (1995, 1998, Male, Female)**

	Total female mobility		Total female mobility		Total male mobility		Total male mobility	
	%	%	%	%	%	%	%	%
	Old def.		New def.		Old def.		New def.	
	1995	1998	1995	1998	1995	1998	1995	1998
<b>EU-15</b>	<b>8.6</b>	<b>9.7</b>	<b>13.4</b>	<b>14.9</b>	<b>7.1</b>	<b>8.5</b>	<b>11.0</b>	<b>12.8</b>

**Table 4: Comparison of mobility rates for Hungary using CLFS and Hungarian National Statistical Office (1998)<sup>2</sup>**

	Mobility of employed HRST %	Overall mobility %
HSO	6.2	9.9
CLFS	10.3	14.3

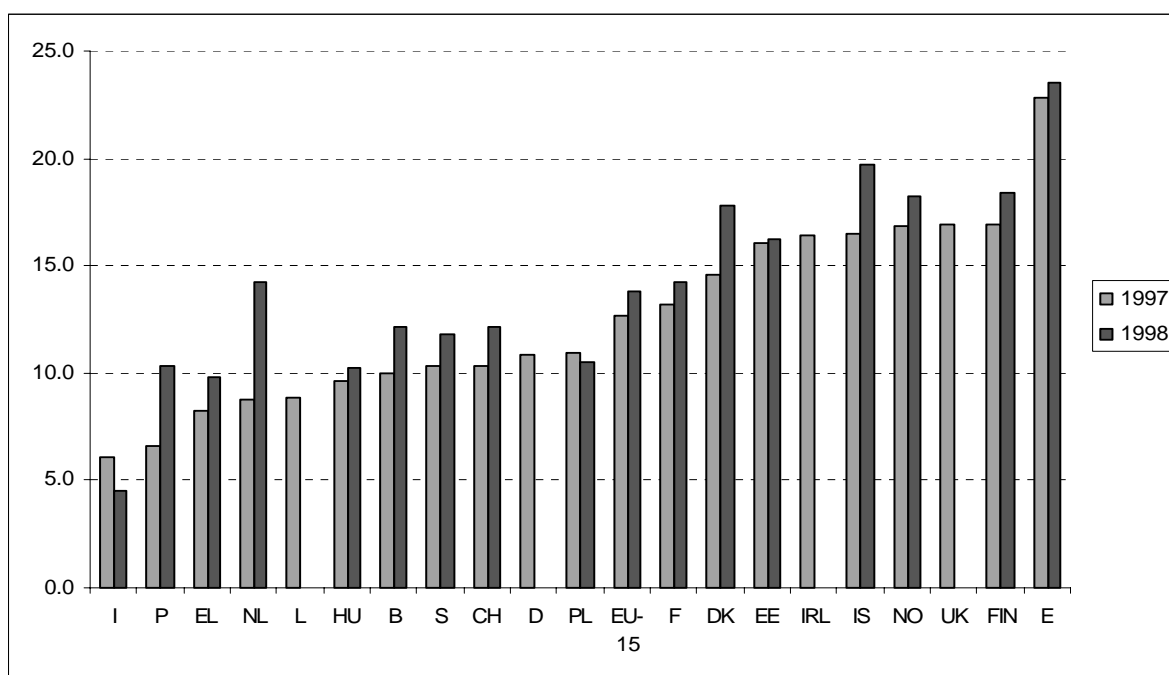
The evidence from the Hungarian Statistical Office (table 4) corroborates that obtained in table 3 – namely the higher mobility rates calculated for this paper (it is assumed that the approach taken for the Hungarian study follows that taken in the feasibility study). It also further indicates that there is a negative correlation between level of qualification (in terms of education or profession) and mobility.

<sup>2</sup> For the Hungarian national data, I am indebted to Elisabeth Viszt, GKI Economic Research.



### 2.3. Mobility at the national level

Figure 3: Trends in National Mobility rates in the EU, EFTA and Candidate Countries (1997-1998)



The following table, for information, displays, where available, the various rates of mobility in the EU, EFTA and Candidate countries.

Table 5: National mobility rates in the EU, EFTA and Candidate Countries (1997 – 1998)

	M o b i l i t y r a t e s ( % )		
	1 9 9 7	1 9 9 8	P r e v i o u s S t u d y
			1 9 9 8
B	10.0	12.1	9.2
D K	14.6	17.8	1.1
D	10.9	..	7.3
E L	8.3	9.8	5.1
E	22.9	23.6	1.3
F	13.2	14.2	8.4
I R L	16.4	..	11.7
I	6.1	4.5	4.1
L	8.8	..	5.1 <sup>a</sup>
N L	8.8	14.2	11.4
A	0.9	..	..
P	6.6	10.4	9.4
F I N	16.9	18.4	14.7
S	10.3	11.8	9.6
U K	16.9	..	1.2
I S	16.5	19.7	..
N O	16.9	18.2	..
C H	10.3	12.2	..
C Z <sup>b</sup>	..	..	..
E E	16.1	16.2	..
H U	9.6	10.3	..
P L	11.0	10.5	..
R O	..	..	..
S I <sup>b</sup>	..	..	..
E U - 1 5	12.7	13.8	9

### 2.4. Mobility according to age

This section examines the possibilities to construct mobility indicators according to age and gender. The example focuses on Belgium, with its population being relatively small within in an EU perspective. The results are not on their own sufficient to provide a comprehensive solution to the

question of the age brackets that should be used. However, they do provide an indication as to what may be possible and what the future demarcation *could* be.

The results borne out by this breakdown are more auspicious than expected. For the youngest age groups, they certainly provide the possibility to remain within the five-year limits outlined in the table. It is not until you reach the 40-44 year old age bracket that caution should be employed interpreting the data. Beyond this it becomes difficult to analyse at all, and even a 50+ age bracket would fail to deliver any ‘uncertain’ results for either women or men (though not if considered as a total).

This is hardly surprising, since one would expect the mobility rate to fall as people grow older and develop stronger ties with their environment – be it job security, friends, family etc.

The rates in the youngest age brackets, on the other hand, are extremely high. The main reason for this is the inclusion of those that previously were students, and while interesting in terms of overall flows should be separated out in order to differentiate between the inflows and the flows within the working population i.e. the data, in their current form, do not allow differentiation between those that are beginning a new *first* job and those that are changing job and thus do not reflect mobility so much as inflows into employment. The data indicate that the sample sizes should be large enough to further investigate differences in mobility rates according to age, at least among the lower age brackets.

**1997**

Age	Employed HRST			HRST that have started work in period $t_1$ to $t$			Mobility (%)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>Total</b>	<b>829,120</b>	<b>713,650</b>	<b>1,542,770</b>	<b>72,770</b>	<b>81,250</b>	<b>154,060</b>	<b>8.8</b>	<b>11.4</b>	<b>10.0</b>
20-24	35,020	55,810	90,830	17,260	31,760	49,030	49.3	56.9	54.0
25-29	121,860	141,610	263,480	23,170	25,300	48,480	19.0	17.9	18.4
30-34	139,680	141,030	280,710	12,330	11,030	23,370	8.8	7.8	8.3
35-39	137,620	122,160	259,770	8,180	5,590	13,770	5.9	4.6	5.3
40-44	118,480	100,060	218,550	5,870	3,940 b	9,810	5.0	3.9 b	4.5
45-49	115,450	80,160	195,620	2,990 b	2,160 a	5,160	2.6 b	2.7 a	2.6
50-54	88,580	49,430	138,010	1,410 a	790 a	2,210 a	1.6 a	1.6 a	1.6 a
55-59	47,720	17,380	65,100	520 a	170 a	690 a	1.1 a	1.0 a	1.1 a
60-64	18,630	3,990 b	22,620	280 a	0 a	280 a	1.5 a	0.0 a	1.2 a
65+	5,480	1,160 a	6,630	160 a	0 a	160 a	2.9 a	0.0 a	2.4 a

**1998**

Age	Employed HRST			HRST that have started work in period $t_1$ to $t$			Mobility (%)		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
<b>Total</b>	<b>848,340</b>	<b>736,350</b>	<b>1,584,710</b>	<b>91,140</b>	<b>100,890</b>	<b>192,010</b>	<b>10.7</b>	<b>13.7</b>	<b>12.1</b>
20-24	37,090	59,030	96,110	19,790	33,540	53,310	53.4	56.8	55.5
25-29	126,410	139,880	266,270	29,840	30,770	60,630	23.6	22.0	22.8
30-34	138,680	146,000	284,670	17,050	15,350	32,380	12.3	10.5	11.4
35-39	141,240	126,090	267,340	9,950	8,520	18,470	7.0	6.8	6.9
40-44	127,520	106,590	234,120	6,870	5,280	12,140	5.4	5.0	5.2
45-49	111,460	81,830	193,300	3,060 b	4,110 b	7,170	2.7 b	5.0 b	3.7
50-54	100,010	52,100	152,100	2,630 b	1,990 a	4,630	2.6 b	3.8 a	3.0
55-59	44,670	18,770	63,450	880 a	720 a	1,600 a	2.0 a	3.8 a	2.5 a
60-64	16,530	3,860 b	20,410	210 a	170 a	380 a	1.3 a	4.4 a	1.9 a
65+	3,750 b	1,760 a	5,510	140 a	0 a	140 a	3.7 a	0.0 a	2.5 a

a: extremely unreliable (can not be published)

b: unreliable or uncertain

**Table 6: A breakdown of mobility rates in Belgium according to age (1997, 1998)**

## 2.5. Sectoral mobility

This section looks at the possibilities to reliably construct mobility data at the sectoral level. Separate tables are provided for 1997, 1998 and 1999.

Below is the list of sectors that are considered:

**Table 7: List of Sector Codes and Definitions**

<b>Sector Code</b>	<b>Sector Name</b>	<b>NACE</b>
AGR	Agriculture, forestry, mining, utilities, construction	01-14, 40-45
CHE	Chemical industry	24
EDU	Education	80
HHT	Higher Tech	30, 32
HT	High Tech	24, 29-35
HTS	High Tech Services	64, 72, 73
HT-TOT	High Tech Total	24, 29-35, 64, 72, 73
I & C	Electrotechnology	30-33
ICT	Information and Communications Technology	30, 32, 64, 72
KIS	Knowledge Intensive Services	61, 62, 64-67, 70-74, 80, 85, 92
MAC	Mechanical and automotive engineering (Machinery and Transport)	29, 34, 35
MAN	Manufacturing	15-37
OCS	Other Community Services	75-99 except 80
OPS	Other Private Services	50-74 except 64, 72
SER	Services	50-99

**Table 8: Sectoral Mobility of Employed HRST 1997 – 1999**

Sectoral Mobility of Employed HRST (%), Males and Females, 1997																	
	AGR	CHE	EDU	HHT	HT	HTS	HT-TOT	I&C	ICT	KIS	MAC	MAN	OCS	OPS	SER	Total hrst mobility	Total mob of emp.
B	9.2	12.4	8.6	8.6 a	10.5	17.3	12.9	10.4 b	15.6	9.7	7.7 a	10.5	8.0	12.7	9.9	10.0	9.9
DK	14.5	5.8 a	16.0	2.5 a	9.2	15.5	12.3	1.0 a	15.5	15.9	17.2 b	10.5	15.7	14.2	15.2	14.6	20.1
D	9.8	7.5	11.2	11.5	8.7	14.3	10.1	10.0	13.1	12.6	8.2	9.0	10.1	13.2	11.5	10.9	12.6
EL	9.1 b	7.4 a	8.6	5.3 a	6.8 a	10.0 a	8.3 b	8.5 a	8.9 a	8.4	4.9 a	9.4	5.8	9.7	8.1	8.3	7.5
E	23.7	22.6	20.1	24.0	23.8	23.7	23.8	24.5	24.0	22.4	24.0	24.1	18.2	26.9	22.5	22.9	27.4
F	13.7	11.5	12.4	11.5	10.6	11.4	10.9	10.3	12.1	13.0	10.3	11.8	11.9	15.1	13.4	13.2	13.2
IRL	12.3	16.4 a	12.8	27.3 b	21.4	25.9 b	22.6	24.9	27.2	15.6	16.4 a	19.5	13.2	20.3	16.2	16.4	15.8
I	5.0	4.2 a	7.4	8.8 b	7.4	6.3	6.9	7.4	6.6	6.1	8.7	7.4	5.1	5.7	6.0	6.1	6.5
L	4.9 a	0.0 a	8.0 b	8.0 a	3.6 a	8.1 a	6.3 a	8.7 a	9.6 a	10.4	3.0 a	3.8 a	8.7	10.6	9.4	8.8	8.1
NL	11.0	5.7 a	5.9	10.1 a	8.4	19.4	13.7	9.7 a	18.8	8.7	9.8 a	8.3	6.1	12.5	8.6	8.8	8.3
A																	
P	11.3 b	2.0 a	7.1	13.6 a	4.1 a	9.3 b	6.8	5.9 a	7.6 a	6.7	4.8 a	4.9 b	5.1	7.3	6.6	6.6	8.5
FIN	16.5	7.9 a	16.0	24.3 b	11.6	17.2	13.5	16.3 b	21.4	18.9	9.6 b	13.0	19.6	15.8	17.7	16.9	17.6
S	9.8 a	15.3 a	11.0	12.8 a	9.9	17.9	13.4	10.4 a	17.7	11.2	8.5 a	8.9	8.0	13.0	10.6	10.3	10.5
UK	14.5	12.3	13.8	23.1	15.7	22.5	18.3	17.9	24.5	16.6	15.3	17.5	14.6	20.5	17.0	16.9	18.9
IS	17.2	385.7 a	18.6	12.2 a	11.3 a	32.6 a	24.1 a	0.0 a	34.9 a	18.0	12.3 a	7.7 a	17.2	17.5	17.5	16.5	22.2
NO	15.9	7.9 a	13.8	12.2 a	8.2 b	18.2	13.7	9.4 b	18.7	16.6	7.3 b	13.8	17.2	18.9	17.3	16.9	16.7
CH	12.7	4.7 a	9.6	20.3 a	8.8	14.2 b	10.7	8.1 b	16.1 b	10.7	12.2 b	8.3	10.1	10.9	10.4	10.3	11.5
CZ																	
EE	10.2	11.2 a	14.1	53.2 a	17.0 b	7.0 a	12.4 b	17.8 a	14.6 a	14.0	17.8 a	17.7	12.8	20.8	16.8	16.1	19.5
HU	8.4	11.6 a	7.6	13.0 a	9.6	10.6 b	9.9	8.5 a	12.0 b	9.5	8.7 a	9.4	8.5	12.7	9.7	9.6	13.4
PL																11.0	15.8
RO																	
SI																	

Sectoral Mobility of Employed HRST (%), Males and Females, 1998																	
	AGR	CHE	EDU	HHT	HT	HTS	HT-TOT	I&C	ICT	KIS	MAC	MAN	OCS	OPS	SER	Total hrst mobility	Total mob of emp.
B	14.1	11.1	10.3	19.1 a	12.3	18.9	15.0	15.7	20.2	12.0	12.2	13.0	10.1	14.2	11.8	12.1	11.8
DK	14.0	8.8 a	16.8	5.4 a	13.8	17.8	15.5	17.3 b	17.8	18.8	13.5 b	16.8	18.1	19.1	18.2	17.8	21.7
D																	13.8
EL	9.7 b	16.2 a	10.1	0.0 a	13.5 b	9.6 a	11.3	12.5 a	8.8 a	10.2	8.1 a	11.1	7.5	11.1	9.7	9.8	9.7
E	26.7	16.1	19.6	26.6	22.8	31.3	26.0	25.8	31.0	22.2	25.1	25.8	17.9	27.9	22.9	23.6	28.3
F	14.5	11.3	14.3	15.0	10.4	13.4	12.0	13.1	14.6	14.3	8.6	12.9	11.3	17.1	14.4	14.2	14.3
IRL																	
I	2.4 b	6.1 b	6.7	2.7 a	2.9	5.9	4.2	2.4 a	5.4	5.4	1.7 a	3.0	3.9	4.4	4.8	4.5	9.4
L																	8.7
NL	14.8	14.2 b	9.2	15.8 b	14.9	21.9	17.9	13.3 b	23.6	13.9	13.8 b	13.7	11.9	18.7	14.2	14.2	14.8
A																	
P	5.0 a	11.8 a	11.0	7.7 a	8.0 a	9.8 b	9.1	3.7 a	9.9 b	11.1	15.7 a	7.1	7.7	14.1	11.1	10.4	12.1
FIN	13.4	5.3 a	23.7	17.2 b	14.1	19.6	16.9	18.2	19.6	21.4	14.5 b	12.3	20.7	17.7	20.1	18.4	19.5
S	9.2 a	12.6 a	9.9	19.3 a	10.3	18.3	15.0	19.2 a	19.5	11.8	7.2 a	11.1	9.8	15.0	12.1	11.8	12.5
UK																	19.8
IS	16.4 a	64.1 a	22.0	12.2 a	35.4 a	24.0 a	26.9 a	0.0 a	22.7 a	19.6	14.7 a	29.5	18.4	18.5	19.0	19.7	23.4
NO	15.1	15.9 b	16.5	0.0 a	17.5	27.0	22.2	20.8 b	27.5	18.6	12.8 b	17.2	16.5	21.3	18.5	18.2	17.9
CH	10.5	4.1 a	12.5	12.3 a	7.2 b	14.2 b	9.6	7.7 b	14.4 b	13.1	10.0 b	7.0	12.6	14.2	13.4	12.2	12.7
CZ																	
EE	15.0	13.8 a	9.9	0.0 a	17.7 a	23.6 b	20.8	12.3 a	22.5 b	13.5	22.6 a	15.9	11.7	23.4	16.5	16.2	19.2
HU	7.8	7.4 a	9.1	18.6 a	8.0 b	12.6 b	10.5	12.5 b	15.7	10.5	10.3 a	10.6	8.8	13.2	10.4	10.3	14.3
PL																10.5	14.7
RO																	
SI																	

a: Extremely unreliable – should not be published

b: Unreliable or uncertain

## PROGRESS AND PROPOSALS FOR THE FUTURE

Further points for discussion:

- Looking at the previous sector of activity
- Inclusion of previously unemployed/Inactive persons
- Investigation of the relevance of GDP growth/Employment growth/Unemployment rates on the degree of mobility
- To investigate possible reasons for disparities between countries
- Comparison with employment in high tech results
- Comparison with Member State data
- Possibility of conducting mobility analysis at the regional level

## Annex 1: Comparison of ISCED '97 and ISCED '76 in the CLFS

**Table B.1.2 : Distribution of educational attainment level based on the three main categories of ISCED (People aged 25-59) - PROGRAMME : LVLA107**

	EU %	B	DK %	D	EL %	E %	F %	IRL	I	L	NL %	A %	P %	FIN	S %	UK
Total Total	100	100	100		100	100	100		100		100	100	100	100	100	
ISCED 1 = 1	23.9	17.6	0.2		38.6	39.9	18.7		20.1			0.8	66.8	8.1	9.5	
ISCED 2 = 2	23.7	22.8	19.8		10.0	24.1	18.9		35.3			23.0	12.4	18.6	13.1	
<b>ISCED 1-2 (1998)</b>	<b>47.6</b>	<b>40.4</b>	<b>20.0</b>		<b>48.6</b>	<b>64.0</b>	<b>37.6</b>		<b>55.4</b>			<b>23.8</b>	<b>79.2</b>	<b>26.7</b>	<b>22.6</b>	
<b>ISCED 1-2 (1997)</b>	<b>40.6</b>	<b>39.3</b>	<b>20.0</b>	<b>18.0</b>	<b>50.6</b>	<b>64.9</b>	<b>37.3</b>	<b>48.7</b>	<b>58.6</b>	<b>52.2</b>	<b>34.1</b>	<b>24.9</b>	<b>76.2</b>	<b>27.4</b>	<b>23.3</b>	<b>44.8</b>
3	10.5	.	.		2.0	.	30.2		7.7		.	.	.		.	
4	0.6	.	.		5.6	.	.		1.0		.	.	.		.	
5	2.5	.	47.9		.	5.3	0.9		.		.	.	.		.	
6	12.6	.	6.0		25.5	9.9	9.9		24.7		.	.	.		.	
7	8.1	32.8	.		0.1	.	0.2		.		9.7	67.6	11.3	43.1	48.7	
ISCED 5b = 8	6.6	14.2	20.4		5.4	5.8	9.1		0.8			2.1	2.7	17.6	16.1	
ISCED 5a = 9	11.1	12.5	5.5		12.8	14.9	12.0		9.8			.	6.6	12.0	12.0	
ISCED 6 = 10	0.5	.	0.2		0.1	0.2	.		0.6			6.5	0.1	0.6	0.6	
<b>ISCED 5-6 (1998)</b>	<b>18.2</b>	<b>26.7</b>	<b>26.1</b>		<b>18.2</b>	<b>20.9</b>	<b>21.1</b>		<b>11.2</b>			<b>8.7</b>	<b>9.4</b>	<b>30.2</b>	<b>28.7</b>	
<b>ISCED 5-7 (1997)</b>	<b>19.6</b>	<b>27.0</b>	<b>26.4</b>	<b>23.5</b>	<b>16.9</b>	<b>19.9</b>	<b>19.3</b>	<b>23.2</b>	<b>9.1</b>	<b>20.4</b>	<b>23.8</b>	<b>8.7</b>	<b>11.8</b>	<b>21.4</b>	<b>27.6</b>	<b>23.4</b>

Notes :

Weighted data  
private households

Notes about these two tables :

a) Nine countries for which data are satisfactory :

Figures are coherent for : EL, E, F, I, A, S, DK

P also can be classified in that category as the Eurostat results have been confirmed by INE.

B : using the specific key of reading

b) Country for which better data is expected : NL

c) No full coherence between 1997 and 1998 data : FIN

d) German separated data has to be checked

e) No data : UK, L and IRL

## **Annex 2: Information from UNESCO concerning the comparability of ISCED '97 and ISCED '76**

Reply by UNESCO to an e-mail concerning the comparability of ISCED '97 and ISCED '76:

The best evidence available at the moment comes from the European Union and OECD. Within the European Union it is much more common for countries to have recorded their post-secondary non-tertiary programmes as upper secondary in the past (and so it is not surprising that the EU found a reasonable concordance between its old and new 'high' categories). However, the opposite is true amongst several non-EU OECD Member States (in particular North America and perhaps Australia too) so you might expect a less satisfactory correspondence for such countries.

I'm sure you are aware ISCED97 contains a new level between secondary and tertiary education (called post-secondary non-tertiary or level 4) which did not exist in ISCED76. The new level was introduced because certain programmes (often, but not exclusively, of a more technical or vocational nature) with similar curriculum content were classified under ISCED76 by some countries as upper secondary education (Eurostat's 'medium' category) and by others as tertiary education (Eurostat's 'high' category).

The answer to your question, therefore, really depends on the group of countries you wish to analyse although it is our experience so far - based on a limited number of countries - that the European pattern is more common than the North American one (ie to have reported post-secondary non-tertiary programmes in the past as upper secondary education rather than tertiary).

There is, of course, much less concordance between the individual levels within tertiary education under the two ISCEDs. The closest 'match' is between ISCED76 level 5 and ISCED97 level 5B (especially for countries in the European pattern). Many countries, however, will have made major changes in reporting at the other two levels within tertiary education. So, although they are fairly comparable in combination, they are not separately (ie ISCED76 level 6 is not usually equivalent to ISCED97 level 5A, nor are ISCED76 level 7 and ISCED97 level 6 even though ISCED76 levels 6+7 and ISCED97 levels 5A+6 are broadly comparable). For example, many countries with Master's programmes reported them in ISCED76 level 7 but should now report them at ISCED97 level 5A. Generally speaking, ISCED97 level 6 (which is PhD type programmes and above) is smaller than ISCED76 level 7 whilst ISCED97 5A is usually larger than ISCED76 level 6. Therefore if you want to make comparisons over time you may not be able to present results at a more detailed level of disaggregation than Eurostat's 'high', 'medium' and 'low'.

### **Annex 3: Guidelines for the publication of data from the Community Labour Force Survey<sup>3</sup>**

The Community Labour Force Survey, like all surveys, is based upon a sample of the population. The results are therefore subject to the usual types of errors associated with sampling techniques.

Based upon the sample size and design in the various Member States, Eurostat implements basic guidelines intended to avoid publication of figures which are statistically unreliable. These guidelines are summarised below.

<b>Member State</b>	<b>A</b>	<b>B</b>	<b>Other countries</b>	<b>A</b>	<b>B</b>
Belgium	2500	4500	Iceland	1000	
Denmark	2500	4500	Norway	1000	5000
Germany	8000	-	Switzerland	3000	10000
Greece	2500	4500	Bulgaria		
Spain	2500	5000	Croatia		
France	3500	8500	Cyprus		
Ireland	2500	4500	Czech Republic		
Italy	3500	7500	Estonia	1750	3500
Luxembourg	500	1500	Hungary	2500	4500
Netherlands	4500	10000	Lithuania		
Austria	2000	-	Latvia		
Portugal	2500	4500	Malta		
Finland	2500	4500	Poland	5000	20000
Sweden	9000	-	Romania	2000	-
United Kingdom	10000	-	Slovak Republic		
EUR11	30000	-	Slovenia	1000	3500
EU-15	54000	-	Turkey		

Figures less than those in column A above, are not published ; By convention, a point or full stop is used instead. When applicable, figures less than those given in column B but greater than those in column A, are printed only with a warning concerning their reliability. By convention, they appear between brackets.

In most cases, data released by Eurostat will conform to these rules. In some circumstances, figures may be provided to researchers without the modifications described above. This is done to enable them to develop their own aggregated tables during the course of their analysis. When these aggregations have been finalised, the guidelines outlined above should again be observed. Compliance with this principle is to be considered as a condition of the release of data in this form.

<sup>3</sup> Document provided by Labour Force Unit of Eurostat